Buy U. S. War Savings Bonds and Stamps

GEOGRAPHIC SCHOOL BULLETINS

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(The National Geographic Society is a scientific and educational Society, wholly altruistic, incorporated as a non-commercial institution for the increase of geographic knowledge and its popular diffusion. General Headquarters, Washington, D. C.)

Contents for Week of May 10, 1943. Vol. XXII. No. 11.

1. Spread-Eagle Kiska, Kidnapped Gibraltar of the West Aleutians
2. Guatemala, the "Tropical Switzerland"
3. Uncle Sam to Slice Steaks from Alaska's Reindeer Riches
4. Inca Farmers, Tamers of Food Plants, Knew Rationing
5. Geo-Graphic Brevities

Luis Marden

WHEN GUATEMALANS MAKE A FACE, SOMEONE ELSE CAN PUT IT ON

One of the favorite outdoor sports of the Indians of Guatemala is the ceremonial dance, usually performed in costume to the music of the marimba. Most popular of these ceremonies is La Conquista, reenacting a garbled story of the country's "Conquest" by Spaniards. This Indian craftsman (above) is making masks for La Conquista dancers—blond, mustachioed, be-ruffed faces to represent Spaniards, weird monkey faces for mythical characters. Some of the masks have red hair in honor of Alvarado, first Spanish governor of Guatemala (Bulletin No. 2).

HOW TEACHERS MAY OBTAIN THE BULLETINS

The Geographic School Bulletins are published weekly throughout the year (thirty issues) and will be mailed to teachers in the United States and its possessions for one year upon receipt of 25 cents (stamps or money order); in Canada, 50 cents. Entered as second-class matter, Jan. 27, 1922, Post Office, Washington, D. C., under act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103, Act of Oct. 3, 1917, authorized Feb. 9, 1922. Copyright, 1943, by National Geographic Society, Washington, D. C. International copyright secured. All rights reserved. Quedan reservados todos los derechos.

UMI

GEOGRAPHIC SCHOOL BULLETIN

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(Founded in 1888 for the Increase and Diffusion of Geographic Knowledge)

General Headquarters, Washington, D. C.

Spread-Eagle Kiska, Kidnapped Gibraltar of the West Aleutians

WHEN Vitus Bering sailed eastward from Siberia over two centuries ago to explore an unknown coast of North America, he paid little attention to his discovery of the uninviting string of Aleutian Islands.

The United States, after buying "Russian America," came to esteem the Aleutians as possible naval bases, and set aside several of them, including Kiska, for that purpose. It was the Japanese, however, who actually converted Kiska into a real base, after occupying it along with Attu and Agattu in the summer of 1942. Recently American fliers have pounded the enemy at Kiska in literally hundreds of raids, sometimes a dozen a day.

Nearer to Siberia and Tokyo Than to the U. S.

The small island stands forlornly near the western end of the Aleutians' arc, a nearer neighbor to Asia than to Alaska and the United States. Only Attu and Agattu and the rest of the Near Island cluster lie between it and Siberian territory. Some 1,370 miles to the southwest of Anchorage on the Alaskan mainland, Kiska lies only 710 miles south of Siberia. Tokyo is 2,130 miles to the southwest. San Francisco, on the other hand, is 2,960 miles southeast.

News accounts have indicated that the Japanese made the island a base for submarines and seaplanes, and built airports there as well.

Kiska itself, practically worth its weight in bombs, is only 20 or 25 miles long from north to south, barely five miles across.

This surf-beaten stretch of barren rock suggests in rough outline a spread eagle. The northern "wing" ends in a sulphur-streaked volcanic mountain that pushes through the low-hanging clouds to a height of more than 4,000 feet. The volcano has been active within this century. The southern wing, with which the outline of the eagle's head is merged, rises in a rocky headland about 1,500 feet high. On the east, the eagle's claws clutch the island's treasure—Kiska Harbor.

Gaunt sandstone bluffs enclosing the harbor on three sides are high and steep enough to dwarf any anchored vessels (illustration, next page). On the east stands flat Little Kiska Island, further surrounding and sheltering the waters. With a narrow shelf of sandy beach along the shore as a doorstep, and rock walls where caves can shelter any installations, the harbor has been compared to Gibraltar's.

Aleuts Abandoned It to Eagles and Foxes

The ruins of several Aleut villages can be spotted on Kiska, dating from the early days of United States possession. At that time a trading post was maintained on the island. For years, however, it has been deserted, except for fox trappers.

It is the home of blue Arctic foxes and eagles, visited by Pacific eider, northern phalarope, ptarmigan, and other northern birds.

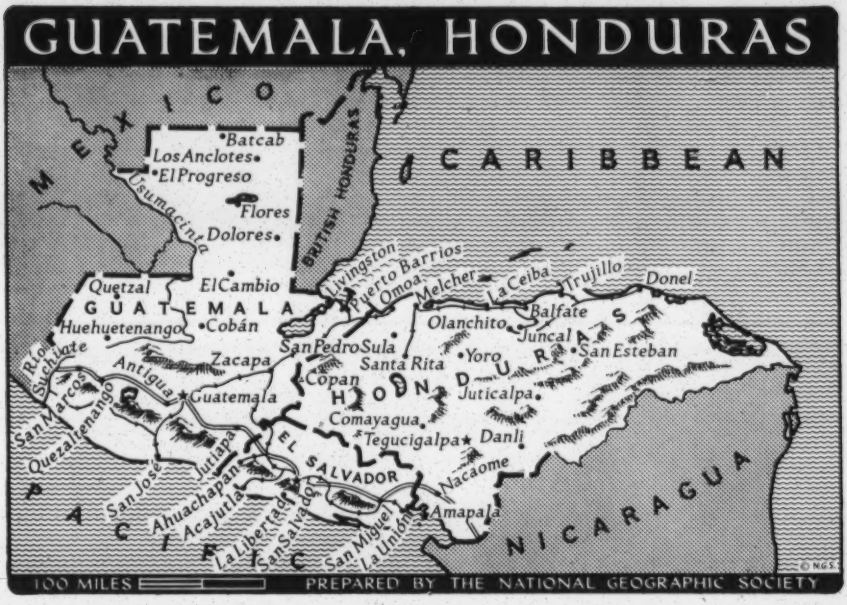
The long days of summer bring the island bright patches of emerald moss and poppies, dwarf azaleas and blue veronicas. As daylight diminishes, the rocky slopes grow bald, except for the reindeer moss that persists into winter.

Note: The Aleutian Islands are shown in a large-scale inset on the National Geographic Society's Map of the Pacific Ocean.

For additional material, see "Riddle of the Aleutians," in the *National Geographic Magazine*, December, 1942; and "Our Air Frontier in Alaska," October, 1940*; and these GEOGRAPHIC SCHOOL BULLETINS: "Facts about the Foggy Aleutians," October 19, 1942; and "Fog-Shrouded Aleutians Are U. S. 'Gangplank' Toward Asia," May 19, 1942.

Bulletin No. 1, May 10, 1943 (over).

UMI



THE ANCIENT "LAND OF ABUNDANCE OF TREES," GUATEMALA OWES MUCH OF ITS MODERN ABUNDANCE TO TREES

One of the widely accepted translations of the Indian name, Guatemala, is reflected in the source of much of the country's wealth today—coffee trees, banana trees, and chicle from sapodilla trees.

Guatemala ranks next to Mexico in the export of chicle, the gum for the United States chewing gum industry. The thinly populated block of northern forest land between Mexico and British Honduras is the chicle country. Its central town, Flores, on an island in Lake Peten, was the stronghold of the Itza Indians who preserved their Maya culture from Spanish conquerors until 1697.

The centers of modern Guatemala have risen among the chain of volcanic mountains parading past the lowlands of the Pacific coast. One of the early capitals, seat of Doña Beatriz de Alvarado—who, at her husband's death, assumed his title to become the new world's first suffragette governor—was literally washed away by a flood. By steps the capital was moved eastward to Antigua (site of the fourth capital) and finally, in 1776, to Guatemala City.

Second-largest city is Quezaltenango, with some 30,000 inhabitants. "The Place of the Quetzal," it takes its name from the vivid red and green bird of the surrounding forests, now the country's national bird. The third-ranking city, the coffee center of Cobán, is nearly as large. Zacapa, next in size, owes its recent growth to rails. There the cross-Guatemala railroad branches off into El Salvador.

Now the leading port of Guatemala, Puerto Barrios, is named for the nation's famous president who died in battle in 1895. Before the development of this port, ships had to stop at Livingston to the west.

The winding Usumacinta, flowing from Guatemala's mountains into Mexico, has little commercial value for Guatemala. Río Suchiate is site of an important frontier bridge that is speeding wartime commerce.

The country's largest lake is Izabal, south of Livingston, which empties into the Atlantic. More famous is the mountain resort lake of Atitlan, west of Antigua, bordered by Indian villages named after the twelve Apostles.

Winding through the spectacular highlands of southern Guatemala, the Pan American Highway is open for traffic across the entire country (Bulletin No. 2).

GEOGRAPHIC SCHOOL BULLETIN

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(Founded in 1888 for the Increase and Diffusion of Geographic Knowledge)

General Headquarters, Washington, D. C.

Guatemala, the "Tropical Switzerland"

(This is the twentieth and last of a series of bulletins, with maps and illustrations, on the republics of Latin America.)

NEXT DOOR to Mexico, fronting on both Pacific and Caribbean waters, Guatemala is the most populous and second largest of the Central American nations strung along the slim land bridge between the American continents.

About the size of Louisiana, this republic crowds within its borders samples of much of the world's mountain scenery. Volcanoes rise more than 12,000 feet high. Foaming cascades streak the steep brown slopes, and blue lakes cradled between peaks remind the visitor that this country is sometimes called the "tropical Switzerland." Traveling through mountain-rimmed valleys, one may see Indian women boiling their laundry in hot springs and rinsing it in the cool waters of a near-by lake.

Indian Influence Strong

Down in the torrid, rain-nourished lowlands is still another side of Guatemala —a typical tropical backdrop of palm groves, breadfruit trees, and big banana plantations; of brilliantly feathered birds chattering in thick jungles; of little thatched houses beside streams hemmed in by ever-encroaching vegetation.

Most of the three and a quarter million people of Guatemala live in the inland highlands. On a pleasant plateau, 5,000 feet above the narrower Pacific coastlands, stands the capital, Guatemala City. A modern center of handsome public buildings, shops, factories, hotels, and movies, this city has a population of more than 175,000. Yet there oxcarts still park behind high-powered motor cars, and the traditional and colorful native market persists, along with a Department of Agriculture which is keenly interested in scientific advances.

It is estimated that 40 per cent of the Guatemalans are chiefly of mixed Indian and Spanish stock, plus some German and Italian colonists who normally are prominent in the republic's economic life. The other 60 per cent are rated pure-blooded Indians, descendants for the most part of the famous Mayas whose pre-Columbian culture was notable for its mathematics, astronomy, architecture, and sculpture.

Coffee, Bananas and Chicle Lead Exports

Many of Guatemala's cities still bear old Indian names, such as Quezaltenango, Totonicapan, Huehuetenango, and Zacapa. The more remote Indian towns and villages have changed little with the years. These settlements often have their own special arts and crafts, such as pottery, woven baskets, and marimba bands (local versions of the xylophone). Their costumes are distinctive like those of the people of Todos Santos, who are called "Uncle Sam boys" by the North American visitor because of their red-and-white striped trousers and blue coats. Another colorful outfit is the richly embroidered knee-pants suit of the men of Santo Tomas Chichicastenango, an adaptation of 16th-century Spanish fashions.

Guatemala took its stand with the United Nations by declaring war on Japan December 8, 1941; on Germany and Italy December 11.

Like other Latin American republics, this nation has felt the economic strains of the shipping shortage and submarine menace. The new railway bridge built

UMI

Official Photograph U. S. Navy

PERPETUAL FOG MAKES KISKA A HIDE-AND-SEEK TARGET, WHICH U. S. FLIERS CATCH, "READY OR NOT"

Kiska shares the fog of the Aleutian chain of islands. They cross the Pacific where moist air from the tropics collides with cold air blowing from the Arctic across Bering Sea; the result is almost perpetual foggy weather, with barely one clear day a week. Under cover of this atmospheric shroud the Japanese occupied Kiska last summer and built a base there. Its magnificent harbor is sheltered on the east by Little Kiska (right foreground). The photograph shows one of the Japanese transports in the harbor blazing after attack by U. S. Navy fliers.

GEOGRAPHIC SCHOOL BULLETIN

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(Founded in 1888 for the Increase and Diffusion of Geographic Knowledge)

General Headquarters, Washington, D. C.

Uncle Sam to Slice Steaks from Alaska's Reindeer Riches

REINDEER, usually associated with Christmas, have recently come into the news in this inappropriate springtime as aids to Uncle Sam. Santa Claus's prancing steeds, now overabundant on Nunivak Island, off Alaska, will transfer to the armed forces and do their part to win the war by supplying venison for the Army.

The herd of fewer than 200 planted on Nunivak just after World War I has increased to about 19,000. Since the island can pasture only 10,000, the surplus reindeer are to be butchered next fall. After the Army has been supplied, meat will be sold to civilians to supplement the rare and rationed beefsteak and the elusive lamb chop.

Herds Started from 16 Pioneers of 1891

The reindeer has been at home on the Alaskan range only since the end of the 19th century. Earlier, whalers had invaded the Arctic, killing walrus, seal, and whale on which natives depended for food and clothing. They traded guns to the natives, thereby speeding up local slaughter of game. In consequence, by 1890 the inhabitants of Alaska were on the verge of starvation.

The U. S. Government stepped in to avert disaster. In 1891 the Bureau of Education of the Department of the Interior brought 16 reindeer from Siberia to Teller Mission on Seward Peninsula—Alaska's westernmost point—which is only 55 miles from the eastern tip of Siberia. Laplanders later were brought over from northern Europe to teach the natives how to care for the animals.

This was the beginning of a stock-raising industry established for the benefit of the Eskimo, Aleut, and Indian natives of the Territory. To some 15,000 of them reindeer are immensely important as a supplement to their fish diet, and as material for clothing. The sinews are used for skin sewing; adult hides for mattresses, sleeping bags, and water boots; fawn skins for parkas, caps, and underwear; and horns for knife handles.

Paw Up Reindeer Moss from Beneath Snow

About 250,000 square miles of Alaska are unsuitable for farming or for cattle and sheep grazing because no grass grows there. This land produces a type of lichen, reindeer moss, a grayish, juiceless growth, which is one of the reindeer's favorite foods. It is estimated that the pasturage could support 4,000,000 animals, a source of 150,000,000 pounds of meat and 1,000,000 hides a year. By 1941 possibly 250,000 reindeer were in this area.

Reindeer are herded much as are cattle on western ranges, to protect them from wolves, thieves, and starvation. They must be led to different forage grounds as seasons change. In summer they can feed above the timber line, on such plants as groundsel, fernweed, mushrooms, and berries. The tundra—hummocky, moss-covered plains, dotted with ponds—along the coast is typical summer range. Reindeer often wade into the water and eat aquatic plants. In winter when the snow is deep their acute sense of smell leads them to their food, and with their broad cleft hoofs and their antlers they paw and poke for plants under the snow. In some regions moss is their only winter food.

A single reindeer will eat as much as 27 pounds of moss a day. As it grows very slowly, the herd must be constantly moved to conserve the plants. About 33

UMI

across the Suchiate River at the Guatemala-Mexico border is expected to help by saving thousands of miles of water-borne traffic.

Guatemala is now reported to be shipping to the United States small but valuable supplies of rubber, mica splittings, and chromite (an ore of chromium), as well as some cinchona bark for quinine. This country is also a potential source for kapok, used for stuffing life preservers.

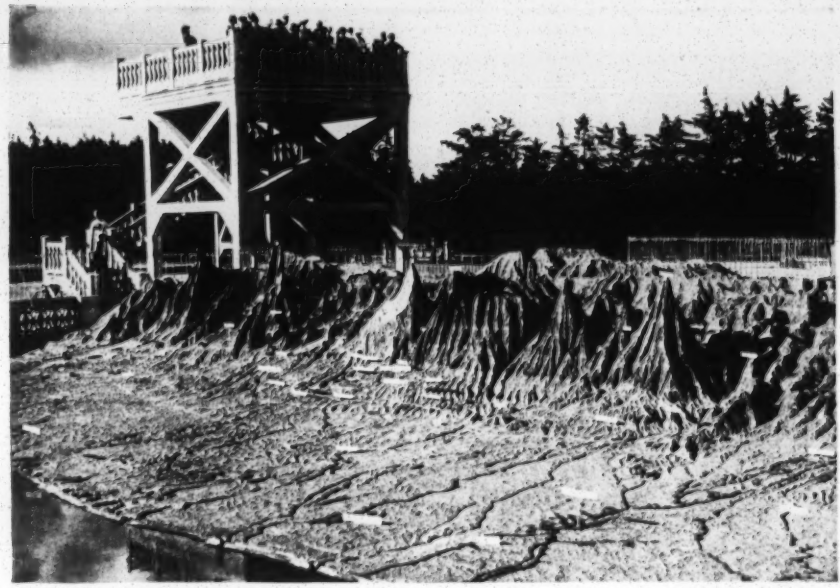
In Guatemala's economic life, as in most of the other Central American republics, coffee and bananas are supreme. With coffee leading by a considerable margin, these two commodities normally make up nearly 90 per cent of Guatemala's exports. Other exports include chicle (used in making chewing gum), timber from rich natural resources of such woods as mahogany and cedar, gold, honey, hides, sugar, and essential oils. In 1940, the U. S. bought 91 per cent of Guatemala's exports; sold 74 per cent of the imports.

Unimportant in trade, but essential for home consumption, are subsistence crops: corn, beans, wheat, rice, and the starchy, bananalike plantain.

Note: Guatemala is shown on the National Geographic Society's Map of Mexico, Central America, and the West Indies.

For further information, see "Guatemala Interlude," in the *National Geographic Magazine*, October, 1936*; and "Suchiate River Gets Anti-Submarine Bridge," in the GEOGRAPHIC SCHOOL BULLETINS, January 25, 1943 (Geo-Graphic Brevities). *(Issues marked with an asterisk are included in a special list of Magazines available to teachers at 10¢ a copy in groups of ten.)*

Bulletin No. 2, May 10, 1943.



Alfred T. Palmer

GUATEMALANS CAN COMBINE GEOGRAPHY HOME WORK WITH A WALK IN THE PARK

Within the circle of a racetrack in Minerva Park, in Guatemala City, the republic offers citizens and visitors a chance to get a bird's-eye view of the country, without being a bird. From observation towers (left) Guatemalan Gullivers can look down on a Lilliput version of their nation. This giant outdoor relief map, built in concrete over one-third of an acre in 1905, shows roads, railways, cities, and mountains, all properly labeled. In miniature lakes and rivers, water trickles down to miniature seas. To be more easily recognizable, the mountains were made five times higher than their true proportion to the area of the country. These model peaks are reminders that many of Guatemala's volcanoes are well over two miles high—notably Tajumulco (13,800 feet), Tacana (13,300 feet), Acatenango (12,980 feet), and Santa Maria (12,362 feet) in the southwest. A handsome pair west of Lake Atitlan are named for fire and water—Fuego (12,582 feet) and Agua (12,310 feet).

GEOGRAPHIC SCHOOL BULLETIN

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(Founded in 1888 for the Increase and Diffusion of Geographic Knowledge)
General Headquarters, Washington, D. C.

Inca Farmers, Tamers of Food Plants, Knew Rationing

THE agricultural system of early Inca Indians, mentioned in a recent speech by Vice President Wallace during his visit to Peru, regulated use of land and all farming activities of the people, for the sake of ensuring food for everyone. The Inca civilization, flourishing between 1100 A.D. and the 16th-century Spanish conquest, had a place for rationing and for the "ever-normal granary."

Planting, harvesting, crop storage, and food distribution were under the watchful eye of administrators. Public warehouses were set up in the chief towns, along the main routes of travel, and in high passes in the Andes.

Knotted Strings Kept Record of Shortage or Plenty

Knotted cords *(quipus)* were the official "ledgers" on which crop production was recorded. One kind of knot or color signified a specific quantity or class of things; another sort of knot or color would identify a different number or group. From records kept by this method, officials determined the amount to be paid as taxes to the government. If a crop failed in some locality and a shortage developed there, a look at the *quipus* would show where produce was abundant. The shortage could then be made good by drawing on surplus stocks in storage elsewhere.

Government warehouses represented the Inca version of the "ever-normal granary." In these was stored the government's share of abundant or surplus crops, to be drawn on by communities where shortages threatened. A typical warehouse would be 28 by 13 feet, 25 feet high, with walls 30 inches thick.

Spain's conquest of Peru disrupted the Inca way of life, shattered the pattern of production, threw food storing and sharing out of gear. When the Spaniards left, Inca chiefs met and examined the *quipus*. If one province had suffered more than others, those which suffered less were called upon to make up the difference so that all shared the burden equally.

Up and Down Tillage Made Famous Terraces

Between its extremes of altitude Peru had climatic variations that matched the range from the Equator to the Poles. It needed an agriculture that could reclaim barren valleys, thrive on 45 degree slopes, straighten rivers, push back glaciers, shift soil, and build waterworks. The first farmers solved the problem by designing and developing terraces.

Early Peru's Inca agriculture was as renowned for these terraces as for its ever-normal granary idea. It had reached the stage of large-scale reclamation projects long before Columbus discovered America. Its stairstep acreage is still a wonder of the world (illustration, next page). Babylon's famous "hanging gardens" were little more than a mound of greenery heaped up by Nebuchadnezzar to please his mountain-bred queen. But the hanging gardens of the Incas climbed high mountainsides and nourished a nation.

Terrace tillage was practiced on steep mountainsides as well as on the lesser slopes of valley floors. A terrace usually had three parts—a wall and two layers of earth behind it. A bed of coarse stones and clay was overlaid with fine topsoil. Terraces ranged from 8 to 14 feet in height; from 8 to 15 feet in width. Banks of 20 to 30 terraces were common. Some of more than 50 "steps" lifted their topmost gardens to the height of the Washington Monument.

UMI

acres is the minimum year-long grazing area for each reindeer.

Reindeer are said to be descended from the wild caribou of northern Europe and Asia. They are unique as the only variety of deer of which both males and females grow antlers, shedding them yearly. The females shed theirs in the summer, the males in the winter.

In the United States reindeer are known also by the name of Woodland Caribou. The Cree Indians call them Swamp Deer. They are found over a considerable area of the earth—in the Western Hemisphere, in Patagonia as well as in Arctic regions; and in forest areas from Maine to British Columbia. They range in northern Europe from Norway across into Asia. Centuries ago they lived also in Scotland.

The government, having established the reindeer industry for the welfare of the natives, educates them for it. A Reindeer Experiment Station was set up in 1928 at College, Alaska, with sub-stations at Nome and on Nunivak Island. In 1942 there were 39 Reindeer Stations supervised by the Office of Indian Affairs. The Alaska Reindeer Law, enacted in 1937, directed that all reindeer owned by whites be purchased with government funds and managed for the benefit of the natives. Sixty-seven per cent are now owned by about 4,600 natives.

The tendency in Alaska is toward large herds, averaging about 7,000. Dogs aid in herding.

Note: For additional information, see "The Nomads of Arctic Lapland," in the *National Geographic Magazine*, November, 1939*; and "Deer of the World," October, 1939*.

Bulletin No. 3, May 10, 1943.

Borg Mesch

SANTA CLAUS IS NOT THE ONLY ONE FOR WHOM THE REINDEER WORKS

One husky reindeer can pull a heavy load of timber, guided by a ski-going Lapp. Although short legged compared to his ancestor, the caribou, he is a powerful animal, able to draw loads of over 3,000 pounds at 10 miles an hour. Reindeer are surefooted and excellent swimmers. The reindeer's winter neckpiece blends with the snow. When summer comes he will turn dark brown with grayish white neck and will grow a new set of treelike antlers, with possibly 30 points. For a thousand years and more such northern nomads as the Samoyeds in Siberia and the Lapps in Arctic Europe have used domesticated reindeer as draft animals, as well as for food and clothing. The reindeer may be six feet high at the shoulders and weigh from 300 to 400 pounds, attaining full size in four to five years.

GEOGRAPHIC SCHOOL BULLETIN

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(Founded in 1888 for the Increase and Diffusion of Geographic Knowledge)

General Headquarters, Washington, D. C.

Geo-Graphic Brevities

YEMEN, QUEEN OF SHEBA LAND, SLAMS ITS DOOR ON FOREIGNERS

Yemen, the "forbidden land" in the southwest corner of Arabia, has abandoned its traditional isolation and admitted that a war is going on in the outside world. The Arabian kingdom has interned all Italian and German residents.

Fronting the southern end of the Red Sea, Yemen is a triangular area of some 75,000 square miles, squeezed between Britain's Aden Protectorate on the south and the independent Arab kingdom of Saudi Arabia on the north. The inland apex of the triangle is indicated on maps by converging lines that lose themselves in the unsurveyed desert of the Rub Al Khali—"the Empty Quarter."

Yemen's central highlands rise to peaks above 10,000 feet. Jebel Manar is 10,561 feet high. The highlands are the only part of the Arabian Peninsula with adequate and regular rainfall, a reason for calling Yemen "Happy Arabia" in contrast to the miserable desert beyond.

Yemen was the site of the Biblical Kingdom of Sheba (or Saba), whose Queen visited King Solomon on one of the world's first goodwill missions. Alexander the Great planned to live in Yemen after his conquest of India.

San'a, Yemen's capital, is situated in the fertile mountainous interior at an altitude of 7,260 feet. Population totals about 50,000. A walled holy Moslem city, with 48 mosques, it is the seat of the Imam Yahya, descendant and mouthpiece of the Prophet. San'a has wide streets, open squares, and tall buildings.

Hodeida is the only sizable port in the realm. The port town of Mocha, whose name became a synonym for coffee, is now almost deserted.

Yemen was the site of the Biblical Kingdom of Shela (or Saba), whose Ethiopia. The inland highlands have produced coffee since Mahomet's time. Natives of Yemen thriftily use the husk of their famous Mocha coffee for themselves, and export the bean. The drink tastes like hot barley water.

Following the lead of their priest-king, the three and a half million isolated Yemenites officially regard Europeans with distrust and look on inventions as works of the devil. Yemen is one of the few countries lacking a railroad. Its one motor highway connects Hodeida and San'a, and is the one road Europeans are allowed to travel. Thus Yemen has earned its name, the Tibet of Arabia.

* * * * *

COMMODORE GRADE REGAINS STATUS IN U. S. NAVY

Commodore—missing link in the scale of active U. S. Navy grades—is back. Its restoration by Congress and the appointment of four commodores revives the memory of John Paul Jones, the Perrys, and other officers bearing that title in American naval history. Like the army rank of brigadier-general to which it corresponds, the commodore grade rates a single star on the shoulder. It fits in just below rear-admiral and above captain.

Authorized only from 1862 to 1899, the designation was accorded to early naval heroes as a courtesy title. Until the grades of rear-admiral and commodore were authorized by the wartime Congress of 1862, captain was the highest official navy grade. From Revolutionary days on, however, a senior captain became commodore by consent of his fellow officers when in charge of two or more ships.

Late in 1775 the Continental Congress made Esek Hopkins "Commander-in-Chief of the Fleet," the first custom-made commodore and admiral of the Con-

UMI

So closely were the stones of the risers fitted that a knife-edge could not be inserted between them. Even the eye was hard put to see the joinings. How the work was done is still a mystery. Llamas may have lugged the stones and soil from valleys. Men may have carried materials in baskets on their backs.

Water was channeled down the mountainsides in *acequias*, some several miles long. Erosion was carefully prevented. Small gutters led from terrace to terrace. Shower baths were possible in the irrigation streams spurting from level to level. Ancient Peru's land-starved farmers put their muscles as well as their hearts into agriculture, carrying the soil as well as caring for it. They honored their dead with terrace gardens rather than with decorative tombs.

Peru's farmers were among the world's greatest tamers of wild plants. The "Irish" potato, not gold, was the real treasure of the Incas. Irish adoption has dimmed its Peruvian origin. Other important crops of ancient Peru included Indian corn, sweet potatoes, and cassava. The plants which Peruvian farms played their part in domesticating were many and diverse—peanut, pineapple, cotton, bottle gourd, lima bean, and guava, for example.

Note: Peru is shown on the National Geographic Society's Map of South America.
For further information, see "The Pith of Peru," in the *National Geographic Magazine*, August, 1942; and "Incas: Empire Builders of the Andes," February, 1938*.

Bulletin No. 4, May 10, 1943.

Aerial Explorations, Inc.

ON STAIRCASE "VICTORY GARDENS" THE INCAS CLIMBED TO CONQUER HUNGER

Struggling for a way to raise crops in their steeply sloping home valleys, the Incas developed a masterly system of farming on terraces, like these in Peru's Urubamba Valley near Cuzco. These were built on both slopes of the mountains by people of the town of Pisac, now in foliage-covered ruins (extreme right). The river, still flowing straight in its ancient channel (upper left), was diked with stone to feed irrigation canals. The outlines of the terraces, built on stone foundations, suggest present-day contour planting. More than four centuries ago the Incas were dealing successfully with such modern problems as irrigation, erosion control, and food rationing. But in spite of their advanced civilization they lacked the weapons to resist the Spanish conquest. Under the greater safety of modern government, the staircase farmers of Pisac live in a new village on the other side of the mountain, flat on the valley floor (left).

tinental Navy. John Paul Jones was most illustrious of the commodores of the Revolution.

When Washington became President there was no U. S. Navy. The *Alliance,* last Continental Navy unit, had been sold in 1785. By 1794 Congress saw that naval defense would be better than tribute to the Barbary and other pirates. Six frigates were authorized and four captains commissioned from former officers of the Continental Navy. By virtue of seniority, John Barry became the new navy's first commodore.

Barry and Truxtun were distinguished commodores in undeclared war with France, Bainbridge and Preble famous as commodores along "the shores of Tripoli." Stephen Decatur and Stephen Cassin added glamour to the title in the War of 1812. At Lake Erie, Commodore Oliver Hazard Perry made a permanent watchword for the navy by his use on a battle flag of the dying words of Captain James Lawrence—"Don't Give Up the Ship." Perry's victory message—"We have met the enemy and they are ours"—has inspired other models of conciseness, such as the recent "Sighted sub, sank same."

In the middle years of the last century the names of three commodores stand out—Lawrence Kearney for his diplomacy in opening trade with China; David Connor for service in Mexican waters; Matthew C. Perry, younger brother of the hero of Lake Erie, for his two-year mission to open trade relations with Japan.

Bulletin No. 5, May 10, 1943.

Paul Pryor

A COMMODORE'S LOG RECORDS THE "DOOLITTLE RAID" OF THE REVOLUTION

These closely written pages are the log of the "Continental Ship of War *Ranger,* April 1779" (legible on top line), kept by Commodore John Paul Jones. In this ship Jones daringly raided British shores during the American Revolution, a bold venture comparable to the bombing raid of General Doolittle's fliers over Tokyo. A few months later Jones took command of the historic *Bonhomme Richard* and battled the *Serapis*—a grim struggle that wrung from him the words, "I have not yet begun to fight." This battle made an international hero of the Scottish sailor who had taken refuge in Fredericksburg, Virginia, promptly joined the Revolution, and been placed in charge of the first ship to fly the Continental flag. Left unemployed when the Continental Navy was disbanded, he served for a while in the Russian Navy and died at the age of 45 in Paris, unaware that President Washington wished to send him to North Africa to ransom prisoners from the Barbary pirates. This log is one of the naval relics in the Mariners' Museum outside Newport News, Virginia.

UMI